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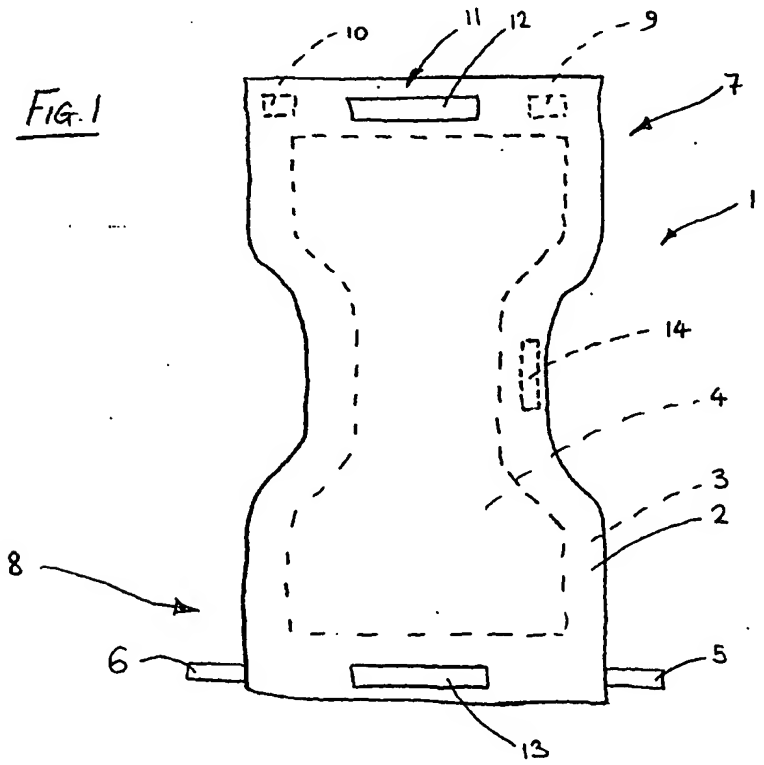
(54) Indicator means for detecting faecal matter

(57) An indicator (11) particularly for use in disposable diapers is provided for detecting the presence of faecal matter. The indicator has at least one indicator portion (12-14; 22; 31, 32) which is triggered into producing a signal upon detection of a gas given off by the faecal matter.

FIG. 1



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Such paper strips might be similar to the Chemcassette® tape type which is available from Zellweger Analytics Inc., IL 60069, USA. These gas detector tapes can be made more or less specific to the gas to be detected.

[0015] Further gases which give a good indication of the presence of faecal matter are mercaptans and volatile fatty acids for example.

[0016] Mercaptan indicator means may be in the form of a cumulative concentration sensor, whereby indication of the presence of mercaptans requires a cumulative build up of mercaptans over a period of time before a cumulative threshold is exceeded. Such systems are currently relatively expensive and thus more likely to be used only in a re-usable environment at the present time. Thus, in terms of absorbent products, mercaptan indicators might typically be arranged as a re-usable item which could be removed from the absorbent article when soiled and then attached to a further article.

[0017] Mercaptans sensors are available for example from the company Otis Instruments. One such detector is the Otis Model OI-240 which is a solid-state hydrogen sulfide detection element having a length of approximately 8 mm (0.316 inches) and a width of 6.9 mm (0.271 inches) and a thickness of only 2 mm (0.080 inches). This detector is very mercaptan-specific and can provide a detection of mercaptans of between 1 and 3 ppm.

[0018] Such mercaptan detectors require a voltage source of about 7.0V and a current of some 165mA, which means that a suitable power source should be provided. However power sources are these days very light and very small and the cost of same is decreasing rapidly such that total additional cost of a detector and power source to an absorbent article can be kept low. Similarly, the size of such units are very small so that they can be made inconspicuous if required. When these detectors are sold as a re-usable unit for attachment to absorbent articles of differing types including both disposable and non-disposable absorbent articles, the cost factor is less important of course.

[0019] The indicator means itself includes at least a part thereof which functions as an indicator portion to provide a signal to the wearer or an attendant that faeces is present. Thus the indicator means may include a combined indicator/detector portion (i.e. detection and indication at the same location) or a detector portion and an indicator portion which are separated positionally, whereby the detector portion might be a gas sensor connected by some type of transport means to an indicator portion in the form of a visible or audible signal means placed for example on the outside of an absorbent product.

[0020] In order to prevent false detections occurring by very small quantities of gas being present (e.g. due to the temporary presence of flatus and not faeces), the indicator means may be provided with a gate means which is set only to allow activation of the indicator portion of the indicator means when a predetermined threshold is reached. The gate means itself is normally in a first, passive or rest state but changes upon the predetermined threshold being exceeded.

[0021] The threshold chosen depends on the parameter being evaluated for deciding when an indication to an observer should be provided. The threshold parameter used could for example be contact time of the gas with a gas sensor or could be combined with gas concentration.

[0022] In this way, an indication can be provided based on a predetermined set of conditions, which allows an absorbent product designer the possibility of varying the predetermined gate parameters so as to suit different groups of user and size of product.

[0023] It will be appreciated that the present invention will find its main use in absorbent products where faeces is most commonly present. Such absorbent products include especially diapers (for adult, infant and baby use), absorbent pants having an absorbent core (e.g. so-called training pants) as well as diaper chassis members and other incontinence products which have replaceable absorbent inserts.

Brief description of the drawings

[0024] The invention will now be explained in more detail with reference to certain non-limiting embodiments thereof and with the aid of the accompanying drawings, in which:

Fig. 1 shows a diaper in a flattened state seen from above and viewed from the body liner (top sheet) side,

Fig. 2 shows the upper (front) waist part of the diaper illustrated in Fig. 1, whereby the indicator means is in the form of a coating,

Fig. 3 shows a view similar to Fig. 2, in which there are two indicator portions, both positioned outside the contour of the diaper and connected to a detector portion within said contour,

Fig. 4 shows a view similar to Fig. 2, in which the indicator means is positioned between the top sheet and the back sheet, and

Fig. 5 shows a cross-sectional view taken along line V-V in Fig. 4.

Detailed description of preferred embodiments:

[0025] In Fig. 1, the absorbent product 1 in the form of a diaper has been illustrated in a flattened form and is depicted from the inner side thereof.

[0026] Reference numeral 2 denotes a liquid and gas permeable top sheet, which is connected to a back

[0037] The indicator means 30, 31 can be arranged to be removably attached to the absorbent article or other surface to which it is applied. For example, hook attachment strips of a hook and loop type fastening means could be attached to the rear of the detector portions with the hooks pointing outwardly such that they can be secured removably to the top sheet by contact therewith. Preferably however the indicator means should be made disposable along with the diaper itself.

[0038] Fig. 4 and the cross-sectional view of same in Fig. 5 show a further embodiment which differs from the embodiment shown in Fig. 1 only by means of the strip 12 having been placed between the top sheet 2 and the back sheet 3. The strip 12 may be either fixed to the top sheet or the back sheet, but has been shown fixed to the back sheet 3 in Fig. 5.

[0039] Further embodiments will be readily understood by the skilled person upon reading the aforegoing and are intended to be encompassed within the scope of the invention as defined by the appended claims

Claims

1. An indicator means (11) for detecting the presence of faecal matter, wherein said indicator means comprises at least one indicator portion (12-14; 22; 31, 32), **characterized in that** said indicator portion provides a signal upon detection of a gas given off by said faecal matter.

2. An indicator means according to claim 1, **characterized in that** said indicator means (11) is triggered by the presence of mercaptans and/or amines and/or volatile fatty acids.

3. An indicator means according to claim 2, triggered by the presence of amines, **characterized in that** said indicator means (11) includes a chemical which changes colour as a result of contact with amine gas.

4. An indicator means according to claim 3, **characterized in that** said chemical is applied in the form of a coating.

5. An indicator means according to claim 4, **characterized in that** said chemical is applied in the form of a spray coating (22) to any one of a back sheet (3), top sheet (2) and absorbent core (4) of an absorbent product (1).

6. An indicator means according to any one of the preceding claims, **characterized in that** said indicator portion (12-14; 22; 31, 32), provides a signal after a predetermined threshold has been exceeded.

7. An indicator means according to claim 6, **characterized in that** said predetermined threshold is a cumulative threshold whereby the total amount of said gas detected by a detector portion (33) of said indicator means over a period of time is used to determine whether the predetermined threshold has been exceeded.

8. An indicator means according to any one of claims 1 to 7, **characterized in that** said indicator means (11) is attached in an absorbent product of the type used for absorbing bodily exudate.

9. An indicator means according to claim 8, **characterized in that** said absorbent product is a diaper (1) or a pair of absorbent pants.

10. An indicator means according to any one of claims 1 to 7, **characterized in that** said gas detector is attached to a support surface or an article covering said support surface.

11. An indicator means according to claim 10, **characterized in that** said support surface is a bed or an article of bed clothing.

12. An indicator means according to claim 10, **characterized in that** said support surface is a seat or a seat cover.

FIG. 3

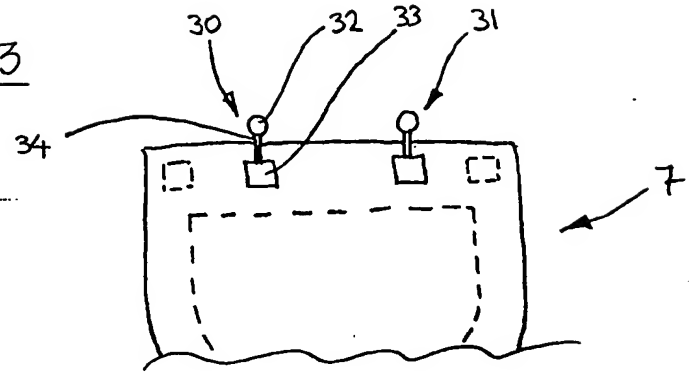


FIG. 4

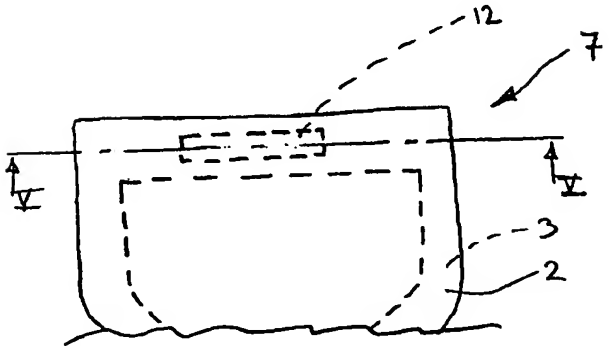
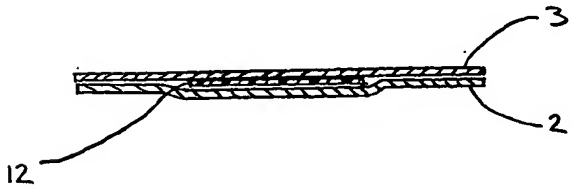


FIG. 5



ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 00 12 7795

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